

GOALS of Zero-configuration tunneling

V6ops WG, IETF 60

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Sources: Mario Morelli (Tilab), Karen Nielsen (Ericsson), Jordi Palet (Consulintel), Jonne Soininen (Nokia), Juha Wiljakka (Nokia)

Zero-configuration tunneling

Commission given by ADs :

- Define *minimal set of goals* of v6ops applicable automatic tunneling mech – henceforth denoted **zero-configuration tunneling**

Starting Point of actual work

- Minimal set of goals required for the 3GPP environment automatic tunneling scenario
....may widen to other environment scenarios (not explicit assumption nor prerequisite)
- More advanced and feature rich tunneling is envisaged provided in form of assisted-tunneling, <draft-ietf-v6ops-assisted-tunneling-requirements-00.txt>

Assumptions and Prerequisites

- 3G environment compatibility pre-requisites:
 - Must be applicable to network and UE constrains of:
 - Link bandwidth (tunnel overhead)(usage cost), Link latency, UE battery power and derived implics on memory, processing power
- Applicability Assumptions
 - No intra-site NATs
 - Site fully Proto-41 penetrable
 - Access network authentication provided by mean external to tunnel protocol exists + specific tunnel service
Authentication/registration not relevant
 - No IPv4 source address spoofing within site
 - Site is protected against proto-41 tunneled packets from the outside

*Site=IPv4 sub-network over which IPv6 connectivity is provided by mean of zero-configuration tunneling.

Goals (1)

1. Automated IPv6-in-IPv4 tunnel establishment
 - Must not require manual configuration at runtime
2. Simplicity
 - “Simple enough” for 3G environment
3. Timing
 - Restrictive timescale wrt. standardization and initial deployments
4. Public and Private IPv4 address space
 - Must allow both
5. Allow native when available
 - Must not restrict usage of native IPv6 when available
6. Easy Deployable and Easy/seamless Phase out
 - No major implications on existing or future IPv4 and IPv6 native infrastructures

Goals (2)

7. Address Assignment on tunnel link
 - Must allow user to assign globally routable address to tunnel link
8. Tunnel Endpoint Discovery
 - Should rely on mechanism intrinsic to network environment – do not require addition of new protocols or infrastructure elements solely for this purpose
 - [draft-palet-v6ops-tun-auto-disc] may apply
9. Tunnel link sustainability
 - Tunnel link should be expected to be active without mandating explicit keep-alive message
10. Tunnel endpoint alive detection
 - Should be possible to ascertain aliveness of tunnel endpoint at any time

Goals (3)

11. Security

- “The tunnel protocol should not impose any new vulnerability to the existing network infrastructure.”
- “The tunnel protocol should not impose any new vulnerability to the nodes implementing the tunnel protocol than what is already present in existing IPv6 networks, where multiple hosts are served by the same router (possible multiple routers).”

Non-Goals

- NAT and Firewall Traversal
- Extensibility to other than IPv6 in IPv4 tunneling
- Mandate authenticated registration for tunnel set-up purposes

WAY FORWARD

- Draft in progress
- Complete within 1-2 weeks as individual submission in accordance with comments and directions given here and on v6ops mailing list

QUESTIONS & COMMENTS ?

Miscellaneous

- Considered out of scope:
 - DNS:
 - Creation of appropriate DNS records
 - Mobile IP:
 - e.g. potential (?) goals to support movement detection
- Goals not exactly nailed, Initial thoughts:
 - Prefix delegation : do not mandate
 - Direct tunneling: don't include
- Assumption not exactly nailed, Initial thoughts:
 - Relaxation of no NAT to NAT with Proto-41 forwarding: don't